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**THE FOLLOWING IS THE ENGLISH TRANSLATION OF THE
ARTICLE 34 AMENDED SHEETS (Pages 16-17a)**

Claims:

1. A process for preparing isobutene by acid-catalyzed dissociation of methyl tert-butyl ether (MTBE),
5 which comprises
fractionating a feed mixture comprising MTBE, C₄- and C₅-hydrocarbons, methanol, methyl sec-butyl ether, TBA and C₄ oligomers to give
 - a) a fraction a) comprising MTBE, MSBE, TBA and C₄ oligomers and
 - b) a fraction b) comprising C₄- and C₅-hydrocarbons, MTBE and methanol,
 - 10 c) dissociating the MTBE present in the fraction a) into methanol and isobutene and
 - d) separating off an isobutene-containing stream from the dissociation product from c) and recirculating the remainder to the feed mixture.
2. The process as claimed in claim 1,
15 wherein
the C₄ oligomers, MTBE, MSBE and TBA are separated off from the fraction a) by means of a distillation in which they are taken off as bottom product.
3. The process as claimed in claim 1,
20 wherein
the C₄ oligomers, MTBE, MSBE and TBA are separated off from the fraction a) by means of a bleed stream.
4. The process as claimed in any of claims 1 to 3,
25 wherein
the isobutene-containing stream which has been separated off from the dissociation product from c) is fractionated in a purification column to give a bottom product consisting of pure isobutene and a top product comprising isobutene and volatile by-products.
- 30 5. The process as claimed in any of claims 1 to 3,
wherein

the isobutene-containing stream which has been separated off from the dissociation product from c) is scrubbed with water and subsequently fractionated in a purification column to give a bottom product consisting of pure isobutene and a top product comprising isobutene and volatile by-products.

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6. The process as claimed in claim 4 or 5,

wherein

the water present in the isobutene-containing stream is removed by means of a decanter.

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7. The process as claimed in any of claims 4 to 6,

wherein

the water present in the isobutene-containing stream is removed by means of a decanter located in the top section of the purification column.

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8. The process as claimed in any of claims 4 to 7,

wherein

the water present in the isobutene-containing stream is removed by means of a decanter which is located at the side offtake of the purification column.

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9. The process as claimed in any of claims 1 to 8,

wherein

the dissociation of step c) and the separation of the isobutene in step d) from the MTBE present in fraction a) are carried out in a reactive distillation column.